

**ENGINEERING STATEMENT SUPPORTING A  
PETITION FOR RECONSIDERATION**

prepared for

**Detroit Free Press, Inc.**

WUSA-DT Washington, D.C.

Facility ID: 65593

Ch. 9 8.7 kW 235 m

Detroit Free Press, Inc. (“DFPI”) is the licensee of analog television station WUSA(TV) Channel 9 and digital station WUSA-DT Channel 34, Facility ID: 65593, Washington, D.C.. WUSA(TV) elected for its post-transition facility to operate on its current analog channel in place of the 1998 allotted Channel 34. However, as a result of the channel election process, the actual coverage “foot-print” and population served by WUSA will be reduced from what it presently serves. Further, WUSA(TV) analog Channel 9 currently operates using a non-directional antenna system. The final antenna pattern allotted by the Commission cannot be easily constructed with a real-world antenna. Using the existing non-directional antenna system forces WUSA to operate with a further reduction in power resulting in serious loss of coverage.

The instant engineering statement has been prepared to support a request for a change in the station’s “certification” to permit the use of the existing non-directional Channel 9 antenna pattern at a power level that does not exceed the bounds of the authorized analog Grade B contour. Such an operation provides a practical implementation using station’s existing non-directional Channel 9 antenna pattern.

**Change in Certification**

With the release of the final table of allotments<sup>1</sup>, WUSA was allotted a directional antenna pattern that cannot be practically implemented using the existing Channel 9 antenna<sup>2</sup>. **Figure 1** depicts the WUSA analog Grade B contour, the Appendix B facility, and the non-directional implementation of the Appendix B facility. As shown, non-directional implementation of the Appendix B post-transition facility seriously degrades WUSA’s coverage and service to the public.

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<sup>1</sup> See Appendix B, “*Seventh Report and Order And Eighth Further Notice of Proposed Rule Making*”, MB Docket No. 87-268, FCC 07-138, Released August 6, 2007.

<sup>2</sup> The existing Channel 9 antenna was installed in 1998 at the same time as the *early adopted* UHF DTV antennas.

Specifically, implementation of the Appendix B post-transition DTV facility will result in a predicted loss of service to 24,037 persons (a loss of 239.2 sq. km) from that currently authorized for the analog Channel 9 facility. Since implementation of the associated Appendix B directional antenna pattern is not practical, a non-directional implementation (within the antenna pattern minima) could be constructed to comply with the Commission's proposed requirement for stations to construct their final DTV facilities so as not to exceed the allotted coverage. This will result in a 4.3 kW non-directional implementation of the final Channel 9 DTV facility. **Table I** provides a comparison of the population and area data. As shown, using the real-world non-directional Channel 9 antenna at 4.3 kW there is a severe loss in coverage (a loss of 172,967 persons and 2,685.5 sq. km) and service to the public.

A more desirable option would be to modify the certification for WUSA to specify replication of the analog Grade B contour. Such a facility would require an ERP of 14.6 kW at an HAAT of 235 meters (the same as the authorized analog antenna). There is, of course, an corresponding directional antenna pattern. Unfortunately, this facility would cause 2.45% interference to co-channel WBPH-TV<sup>3</sup>, Bethlehem, Pennsylvania. A non-directional implementation of a DTV implementation of the WUSA Grade B contour, results in an ERP of 11.9 kW at an HAAT of 235 meters. This facility causes 2.17% new interference to WBPH-TV.

Since the allotted Appendix B facility will result in severe coverage limitations and replication of the authorized Grade B contour causes interference in excess of current Commission policy, DFPI proposes herein to modify its original certification to specify a revised set of certification parameters that more closely replicates the coverage of the analog WUSA facility than does the Appendix B allotment facility. The proposed change in certification parameters involves the use of the existing Channel 9 non-directional antenna pattern operating with 8.7 kW ERP at 235 m HAAT (see **Table II** for a tabulation of the pertinent parameters). Thus, WUSA can employ for its post-transition operation the existing antenna currently in use by the analog WUSA operation.

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<sup>3</sup> WBPH's licensee, Sonshine Family Television, Inc., has filed what appears to be a "pre-emptive" filing against the Allbritton/Gannett Joint Petition for Reconsideration. The Allbritton/Gannett Petition did not contain any references to technical parameters for WUSA-DT's post-transition operation. The instant engineering statement provides the necessary technical parameters absent in the Allbritton/Gannett Petition.

For completeness, a detailed interference study was conducted in accordance with the terrain dependent Longley-Rice point-to-point propagation model, per the Commission's Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, July 2, 1997 ("OET-69")<sup>4</sup>. The interference study examined the net change in interference as experienced by other stations that would result from the proposed facility (in lieu of the reference WUSA-DT allotted facility). Only facilities listed in Appendix B of the Seventh Report and Order were studied. As shown in **Table III**, interference to pertinent affected stations is at or below the 0.1% "new" interference limit.

## **Conclusion**

As demonstrated above, coverage for the WUSA-DT "post-transition" operation will be severely limited if the currently allotted DTV facility is employed. By changing the WUSA-DT certification to the facilities proposed herein, coverage by the Channel 9 post-transition DTV facility provides far better service to the public and interference is not increased beyond the prescribed limits. Further, the proposed DTV facility can be easily implemented with the existing installed Channel 9 antenna so that the analog shutdown deadline of February 17, 2009 can be met.

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<sup>4</sup> The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A standard cell size of 2 km was used. Comparisons of various results of this computer program (run on a Sun computer) to the Commission's implementation of OET-69 show good correlation.

## **Certification**

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief. Mr. Mertz is a principal in the firm of *Cavell, Mertz & Associates, Inc.*, holds a Bachelor of Science degree from Oglethorpe University, and has submitted numerous engineering exhibits to the Federal Communications Commission. His qualifications are a matter of record with that agency.



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## **Attachments**

Table I	Population Comparison to 1998 Digital Table of Allotments
Table II	Proposed Allotment Parameters
Table III	Interference Study Summary
Figure 1	Coverage Contour Comparison – Ch. 9 Analog Grade B Contour Ch 9 R&O Allotment Service Contour Non-directional Implementation within the 7 <sup>th</sup> R&O Service Contour
Figure 2	Coverage Contour Comparison – Ch. 9 Analog Grade B Contour Proposed Ch. 9 Allotment Service Contour

Table I  
**POPULATION COMPARISON TO 1998 DIGITAL TABLE OF ALLOTMENTS**  
 prepared for  
**Detroit Free Press, Inc.**  
 WUSA-DT Washington, D.C.  
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	( a ) NTSC Ch. 9	( b ) DTV Ch. 9	( c ) DTV Ch. 9	( d ) DTV Ch. 9
	1998 Table Facility Calculated (2000 Census)	7th R&O Table (2000 Census)	Non-directional implementation of 7th R&O facility (2000 Census)	Proposed Non-Directional Operation (2000 Census)
<b>Population</b>	7,099,037	7,075,000	6,926,070	7,121,003
% difference from NTSC 1998 Table Facility				
difference from column "d" facility		-24,037	-172,967	21,966
% difference from column "d" facility		-0.34%	-2.44%	0.31%
<b>Area</b>	22,783.2	22,544.0	20,097.7	22,654.2
% difference from NTSC 1998 Table Facility				
difference from column "d" facility		-239.2	-2,685.5	-129.0
% difference from column "d" facility		-1.05%	-11.79%	-0.57%
	1998 Table NTSC facility using 2000 Census data and non-directional antenna.	7th R&O allotment facility; 17 kW at 254 m with theoretical directional antenna pattern	4.3 kW at 235 m, using non- directional NTSC antenna; non-directional implementation of 7th R&O facility	8.7 kW ERP at 235 m using non-directional NTSC antenna; does not cause 0.1 percent incremental interference to affected stations.

Table II  
**PROPOSED ALLOTMENT PARAMETERS**  
prepared for  
**Detroit Free Press, Inc.**  
WUSA-DT Washington, D.C.  
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Channel	DTV Channel 9
Site Coordinates	38° 57' 01" N 77° 04' 47" W (NAD-27)
Antenna Radiation Center	308 meters above mean sea level 235 meters above average terrain
Antenna Relative Field Pattern	Omni-Directional
Effective Radiated Power	8.7 kilowatts

Table III  
**INTERFERENCE STUDY SUMMARY**

prepared for

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<u>Channel</u>	<u>Affected Station</u>	<u>City</u>	<u>State</u>	<u>7th R&amp;O Table Baseline (2000 Census)</u>	<u>Calculated Baseline (2000 Census)</u>	<u>Interference Population 7th R&amp;O facility (2000 Census)</u>	<u>Interference Population with Proposal (2000 Census)</u>	<u>Population Difference</u>	<u>New Interference</u>
8	WWCP-TV	Johnstown	PA	2,534,000		- - -No interference - - -			
8	WGAL	Lancaster	PA	3,313,000	3,313,601	86,016	86,446	430	0.01%
9	WSKY-TV	Manteo	NC	1,725,000	1,725,646	88	6	-82	0.00%
9	WTOV-TV	Steubenville	OH	2,829,000		- - -No interference - - -			
9	WBPH-TV	Bethlehem	PA	5,342,000	5,342,522	488,580	494,167	5,587	0.10%
10	WHTM-TV	Harrisburg	PA	2,185,000		- - -No interference - - -			



